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aureus Types 5 and 8; 2.3 Lipopolysaccharide (LPS) and Lipooligosaccharide (LOS) Conjugates; 2.3.1 Escherichia coli O157 2.3.2 Vibrio cholerae O1 and O1392.3.3 Shigella dysenteriae Type 1, sonnei and flexneri 2a; 2.3.4 Neisseria meningitidis and Nontypeable Haemophilus influenzae; 2.4 Total Synthetic Glycoconjugate Vaccines; References; 3 Adjuvants for Protein- and Carbohydrate-Based Vaccines; 3.1 Introduction; 3.2 Initiation and Stimulation of Adaptive Responses; 3.3 "Old" Adjuvants and Formulations; 3.3.1 Aluminum; 3.3.2 Emulsions; 3.3.3 Saponins, QS21, and ISCOMS; 3.3.4 Liposomes and Microparticles; 3.3.5 Antigen/Formulation Targeting; 3.3.6 Induction of CD8 CTLs with Soluble Antigens 3.4 Renaissance of Innate Immunity 3.4.1 Toll-Like Receptors: Agonists and Roles; 3.4.2 Non-TLRs Innate Receptors; 3.4.3 Other Receptors Involved in Antigen Capture and Recognition; 3.5 From Basic Research to Practical Applications: Identification of New Adjuvants; 3.5.1 TLR Synthetic Agonists; 3.5.2 Combination of PRR Agonists; 3.6 Adjuvants for Carbohydrate-Based Vaccines; 3.6.1 Td and Ti B-Cell Responses; 3.6.2 Adjuvants for "Free" Polysaccharides (Ti Antigens); 3.6.3 Adjuvants for Glycoconjugate Vaccines (T-Dependent Antigens) 3.7 Combinations of Adjuvants: Preclinical and Clinical Developments 3.8 Immunomodulation of Existing Responses: Adjuvants for Therapeutic Vaccines; 3.9 Take Another Route; 3.9.1 Adjuvants for Mucosal Immunization; 3.9.2 Epidermal or Intradermal Routes; 3.10 Practical Aspects of Adjuvant Development; 3.10.1 Regulatory Aspects; 3.10.2 Safety versus Efficacy: Risk-Benefit Ratio; 3.11 Preclinical Models Used in Adjuvant Development; 3.11.1 Animal Models; 3.11.2 In vitro Models; 3.12 Conclusions and Perspectives; Acknowledgment; References; 4 Carbohydrate-Based Antibacterial Vaccines 4.1 Introduction

Sommario/riassunto

The fundamental science and the latest developments in carbohydrate-based vaccines The relatively new field of glycoimmunology has emerged from the marriage of glycobiology and immunology, in recognition of the important role carbohydrates play as antigenic determinants. Carbohydrate-Based Vaccines and Immunotherapies comprehensively reviews the state of this exciting field, offering a single source for both the fundamental science and the latest developments. With contributions by leading experts, this resource covers the design, synthesis, evaluation, and applications of va
